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MEMORANDUM

DATE. 1 December 1998

TO David Bennett, WAM, U.S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle
RMM Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Polychlorinated Biphenyls (Aroclor) Data
Laboratory Batch: K9805547
Site: Duwamish River

WORK ASSIGNMENT NO: 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC. CONTROL NO : 4000-019-038-AAAK

cc. Bruce Woods, RAP-WAM, U.S EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle (memo only)
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of twelve sediment samples, laboratory batch K9805547, collected from the Duwamish River has been completed. Samples were analyzed for polychlorinated biphenyls as Aroclors using EPA Method 8082 by Columbia Analytical Services of Kelso, Washington The samples were numbered

98344010	98344011	98344012	98344013	98344014
98344015	98344016	98344017	98344018	98344019
98344020	98344021			

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review

follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240.1-05, February 1994)

1. Timeliness

   All samples met holding time criteria of 14 days for sample extraction and 40 additional days for extract analysis

2. Initial Calibration

   a) Mixed Aroclor 1016/1260 Standard

      A six point initial calibration was performed. Calibration factors were calculated for a minimum of five peaks, none of which are common to both Aroclors The calibration factor percent relative standard deviation (%RSD) was less than 20 percent for all peaks used for quantitation.

   b) Individual Aroclor Standards

      Calibration factors were calculated from a mid-range standard for the other 5 Aroclors using 3 to 5 peaks

3 Calibration Verification

   Aroclor 1016/1260 calibration verification standards were analyzed every 12 hours using a midrange standard. The calibration factor percent difference was less than 25 percent of the initial calibration value.

4 Retention Time Windows

   Retention Time Windows were calculated from initial calibration Retention times for calibration verification standards were within established windows

5. Detection Limits

   Instrument detection limits met project required quantitation limits

6. Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met.

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch.

7. System Monitoring Compounds (Surrogates)

Hexabromobiphenyl was used as the surrogate. Surrogate compound percent recovery met quality control criteria for all samples.

8. Matrix Spike and Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) percent recoveries met QC guidelines. All relative percent differences between the MS and MSD recoveries were within QC guidelines

9. Laboratory Control Sample (LCS) Analysis

LCS recovery goals for Aroclors were established in the project Sampling and Analysis Plan at 70 to 130% for sediment. Based on conversations with the laboratory, historical control chart limits of 26 – 142 for Aroclor 1016 and 40-139 for Aroclor 1260 were also used for data qualification.

All LCS percent recoveries met QC guidelines

10. Field Duplicate Analysis

No field duplicates were associated with this SDG

11. Second Column Confirmation

The relative percent difference (RPD) in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples:

Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-608 Conc. (µg/Kg)	RPD
98334018	Aroclor 1260	1143	1846	47
98334021	Aroclor 1242	72	28	88

Differences can arise from analytical interferences on one column However, the relative percent differences are not deemed significant at the reported concentrations. The lower concentration was reported for each analyte

12 Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. No unusual problems were noted

13 Laboratory Contact

No laboratory contact was required.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values

Data Qualifiers

U - The compound was analyzed for, but was not detected

UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less then CRDL or lowest calibration standard.

R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

N - Presumptive evidence of presence of material (tentative identification).

I - Elevated reporting limit due to matrix interference.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805547
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344010	Units	ug/Kg (ppb)
Lab Code	K9805547-001	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	8/31/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	8/31/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	8/31/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	8/31/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	8/31/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	8/31/98	126	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	8/31/98	176	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

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Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344011	Units	ug/Kg (ppb)
Lab Code	K9805547-002	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	8/31/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	8/31/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	8/31/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	8/31/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	8/31/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	8/31/98	100	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	8/31/98	80	

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Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9805547
Date Collected: 8/17/98
Date Received: 8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name 98344012
Lab Code K9805547-003
Test Notes:

Units ug/Kg (ppb)
Basis Dry

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	106	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	104	

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Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805547
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344013	Units	ug/Kg (ppb)
Lab Code	K9805547-004	Basis.	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	160	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	119	

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Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805547
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344014	Units	ug/Kg (ppb)
Lab Code	K9805547-005	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	165	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	125	

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Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805547
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344015	Units	ug/Kg (ppb)
Lab Code	K9805547-006	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	118	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	89	

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Analytical Report

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Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344016	Units:	ug/Kg (ppb)
Lab Code	K9805547-007	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	131	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	96	

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Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805547
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344017	Units	ug/Kg (ppb)
Lab Code	K9805547-008	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	105	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	80	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805547
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344018	Units	ug/Kg (ppb)
Lab Code	K9805547-009	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	753	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	200	10	8/24/98	9/1/98	2900	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	1140	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805547
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344019	Units	ug/Kg (ppb)
Lab Code	K9805547-010	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	187	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	121	

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Analytical Report

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Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344020	Units	ug/Kg (ppb)
Lab Code	K9805547-011	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	117	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	106	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Roy F Weston, Inc	**Service Request:**	K9805547
Project:	Duwamish River/4000-027-001-2019-38	**Date Collected:**	8/17/98
Sample Matrix:	Sediment	**Date Received:**	8/18/98

Polychlorinated Biphenyls (PCBs)

Sample Name	98344021	Units	ug/Kg (ppb)
Lab Code	K9805547-012	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Aroclor 1016	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1221	EPA 3550B	8082	40	1	8/24/98	9/1/98	ND	
Aroclor 1232	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1242	EPA 3550B	8082	20	1	8/24/98	9/1/98	28	
Aroclor 1248	EPA 3550B	8082	20	1	8/24/98	9/1/98	ND	
Aroclor 1254	EPA 3550B	8082	20	1	8/24/98	9/1/98	94	
Aroclor 1260	EPA 3550B	8082	20	1	8/24/98	9/1/98	82	

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